



Rapid Implementation of a Hybrid Telehealth Modality During the COVID-19 Pandemic and its Impact on Electronic Record Entry

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Abstract

This report describes the adoption of a hybrid telehealth modality implemented in a student-run free clinic after the onset of the Coronavirus disease 2019 (COVID-19) pandemic in March 2020, with particular emphasis on the impact it may have on electronic health record entry. Our hybrid telehealth modality flow board summarizes how patients received care from volunteers in person and remotely. Successes of the modality included collecting medical records before the visit, creating more defined roles, and implementing e-prescriptions. Challenges faced included recording vital signs and communicating between volunteers on-site and remotely. We present our lessons learned and future plans for other free clinics to optimize their telehealth modalities.

Introduction

The University of Central Florida (UCF) Comprehensive Medical Outreach team provides free care for migrant farmworkers in Apopka, Florida. A multidisciplinary team including medical, nursing, pharmacy, behavioral health, social work, and physical therapy students provides care under supervision from faculty advisors. As coronavirus disease 2019 (COVID-19) numbers increased dramatically in March 2020, the care of the farmworkers transitioned from in-person appointments to hybrid telehealth “clinics”.^{1,2} This transition exposed certain obstacles encountered when redesigning a student-run free clinic into an online format. Similarly, various medical schools across the United States (US) launched telemedicine initiatives to adapt their student-run free clinics to the changing medical climate.^{3,4} For instance, student volunteers from Harvard Medical School and the Massachusetts General Hospital Institute of Health Professions developed a telemedicine program to assist with

the triage of respiratory complaints of Hispanic patients in Chelsea, Massachusetts.⁵ In Miami, Florida, students launched a syringe services program, facilitating a transition from in-person to virtual care of patients struggling with opioid use disorder.⁶ As the COVID-19 pandemic worsened in Central Florida, the UCF College of Medicine students and faculty introduced their own hybrid modality of healthcare delivery.⁷ Implementation of the new clinic model began in August 2020 and centered around limiting the frequency of in-person care in order to follow stay-at-home and social distancing guidelines. On site, there were only patients, physicians, and limited staff and student volunteers, whereas the rest of the health care volunteers connected to the patients virtually through an online platform as seen in Table 1 and Figure 1.

The onset of the pandemic required a transition to a telehealth modality. The impact of a hybrid telehealth modality on medical outreach or student-run free clinics related to electronic health records (EHR) has yet to be investigated.

Table 1. General timeline of patient visit

Time	Activity	Room	Clinic staff
17:00-17:15	Check-in/vitals	Check-in	Nursing student
17:15-17:30	Medical reconciliation/Labs (if necessary)	Check-in	Pharmacy student Nurse or physician for labs
17:30-17:45	Patient interview	IM room	Medical, pharmacy, nursing students
17:45-17:55	Patient presented to physician	IM room	Medical student/physician
17:55-18:00	Physician discusses plan with patient	IM room	Medical student/physician
18:00-18:30	Physical therapy/behavioral health visit (if necessary)	PT/BH room	PT/BH student
18:00	OTC medications	Pharmacy	Pharmacy student
Variable	Education team discusses reason for visit and confirms patients' next steps	Education	Medical student

The time limit for the patient interview was exceeded if a patient's case required more time; patients were pre-assigned to rooms but could be rearranged to fit availability

IM: internal medicine; PT: physical therapy; BH: behavioral health; OTC: over the counter

Literature pertaining to medical outreach and telehealth during the COVID-19 pandemic has discussed triage of respiratory complaints, virtual care for opioid use disorder, and lessons learned when providing support to patients in the community. Interventions included providing masks, adopting a screening questionnaire prior to in-person clinics, providing medications during complete telehealth modalities, determining the barriers to patient attendance at a virtual dermatology clinic, and assessing the outcomes of patients using telemedicine during COVID-19 with respect to how volunteers triaged their patients.^{3,4,8-14} This descriptive report, therefore, aims to outline the impacts of a telehealth modality on students' EHR fluency.

Successes

Defined Roles

Internal Medicine break-out rooms consisted of three UCF College of Medicine volunteers. Since this was a hybrid telehealth clinic, the pre-clinical first- and second-year medical students asked questions via the online video conferencing tool. The clinical third- and fourth-year medical students scribed, drawing on their foundation of note-taking and prior experience with student-run free clinics. The preclinical students were, therefore, able to improve their patient interviewing skills with a more experienced medical student to correct or aid them as needed. A third- or fourth-year medical student also

performed the physical exams. Patients' cases were then presented to the attendings with the patient able to watch the presentation, akin to bedside rounds.

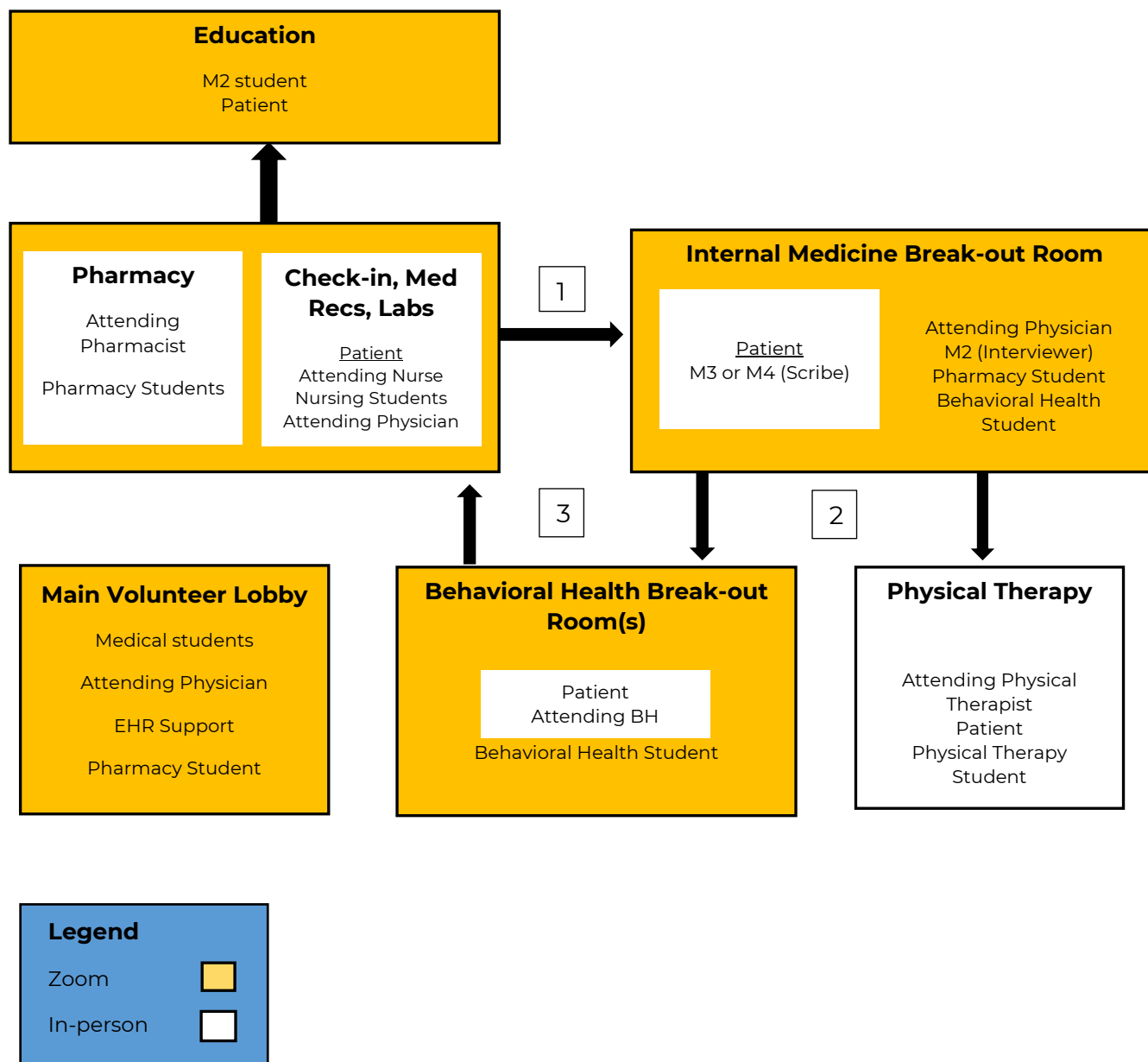
Collection of Medical Records Prior to Visit

The week before each clinic, a pharmacy student telephoned each patient to remind them about their appointment and to obtain a history of medication allergies and a current medication list. Previous clinic directors found it was easier for patients to remember their medication name and dosage at home, where they can quickly look them up rather than on-site.

Increased Time with Patients

With the adoption of the hybrid telehealth modality, more time was spent on each patient compared to the previous in person model, for the exchange of fewer patients (to minimize the number of people in the building). Prior to the hybrid modality, over one hundred patients would be seen during each clinic. In person, volunteers were distributed to different roles to improve clinic flow. This included five minutes of registration, fifteen minutes of patient triage, and around ten minutes of discussion with the physician providing care. With the virtual setting, a limited number of volunteers and physicians were present in the building to maintain social distancing guidelines. As a result, students from each professional school were placed in a Zoom room, as aforementioned, to interview the patient before

Figure 1. Hybrid telehealth modality layout



Flowchart depicting clinic flow and locations of the patient and clinic staff during the patient encounter. Third- or fourth-year medical students were either on-site or scribing remotely using Zoom, an online video conferencing platform. Patients could go to either a behavioral health break-out room or physical therapy room if indicated, or they could go to education to receive information about their prescriptions and to ask medical student volunteers questions about their visit. The education team made sure that the patient knew why they came in, what they were told by the physician, and what their care plan moving forward entailed.

M2: second year medical student; M3: third year medical student; M4: fourth year medical student; EHR: electronic health record; BH: behavioral health

the physician completed the visit. The hybrid modality was limited to two patients per hour. Fifteen minutes were allotted for intake of each patient, twenty minutes for the interview, and the final twenty-five minutes were set aside for

patients to speak with the physician and finalize any prescriptions or plans. If the patient needed to speak with behavioral health or a social worker, they were placed in a different Zoom room without a designated time limit, as this would not

impact clinic flow.

With this model, six to ten patients were seen at each bi-monthly clinic. Therefore, in a quarter, thirty-six to sixty patients were seen, which is a total reduced number compared to a regular clinic. That said, there was also fear among the community regarding COVID-19 which kept the clinics at a reduced capacity regardless. Ultimately, this model proved educational for students and patients felt more secure with the increased time spent as more providers and volunteers were in the same Zoom room.

EHR Documentation

Training to utilize the EHR was transitioned from an in-person session to a video conference. Self-learning modules and documentation transitioned from preclinical to clinical students. Something to consider is that third- and fourth-year medical students or medical students with volunteering experience will be more skilled in documentation, which may impact EHR accuracy and consistency.

Challenges

Vitals

Vital sign documentation has historically been used as a marker of documentation accuracy in our Subjective, Objective, Assessment, and Plan notes. During the telehealth clinics, vital signs were taken by nursing students and then communicated to the clinical medical student scribe. Several challenges in recording vitals were encountered. With multiple patients showing up simultaneously, volunteers may have been more likely to forget e-signing their notes before discharge or specific procedures for taking vital signs while attempting to maintain clinic flow. Other factors that might have impacted vital sign entries include nursing student experience, number of attendings on-site mentoring students, the potential lack of communication with clinical medical students, and the medical students not being aware of their role to record vitals. Volunteers often change between clinics, so though one group may have learned the proper procedures, the next group may make mistakes. One solution to combat the challenge of documenting vitals includes the recent incorporation

of Bluetooth peripheral devices that automatically upload data into the EHR. Another solution was to ensure the training was standardized and given by the same clinic director every time. Everyone received the same training from the clinic director or service director who presented a PowerPoint (2019, Microsoft, Redmond, WA) curated to the virtual modality.

Communication

During the hybrid telehealth modality, the means of communication between in-person and remote volunteers was through the online messaging platform, Slack (Version 21.05.20.0-30011003-12, Slack Technologies, San Francisco, CA). Slack was initially used to plan clinic flow, communicate when patients were ready (no identifiable information was included), and send out general reminders. Challenges were encountered early on during this transitional period. In-person volunteers were found to be less attentive to Slack out of respect to patients. To combat this, one nursing student was designated as the floor manager and was the point person for reporting patient's status throughout the clinic, i.e., their arrival and completion with vitals and break-out rooms. The nursing student answered any questions concerning patient status and was tasked to locate individuals within the clinic to relay messages.

Considerations and Lessons Learned

1. Telemedicine Bluetooth peripheral devices may improve automatic charting of vital signs.
2. A building with separate rooms will allow for privacy and social distancing while ensuring break-out conversations on Zoom (2020, Zoom Video Communications, San Jose, CA) cannot be heard.
3. Appoint floor managers on-site to update a flow chart visible in the virtual space and in person.
4. It is difficult for those involved in direct patient care to manage multiple communication systems, including messaging platforms (e.g., Slack) and messaging within Zoom across break-out rooms.
5. If there is a concern for the loss of Wi-Fi access

or the EHR system crashing, it is essential to save clinic notes in a HIPAA (Health Insurance Portability and Accountability Act) compliant location to be uploaded later.

6. Create backup plans for internet loss, obstacles with e-signing, disruptions of clinic flow, and barriers to communication.

Future Directions

When student-run free clinics return to being in-person, a model will be adopted in which students, staff, and faculty volunteers continue to have more defined roles while optimizing educational experiences such as those provided during the hybrid modality. This model will include increasing the pool of physicians able to participate remotely and increasing the number of specialties offered, potentially through specialized peripheral devices. For example, the Cardio Sleeve can provide an electrocardiogram (EKG) and heart sounds remotely and facilitates evaluation by a cardiologist.^{16,17} Current peripheral devices available at the student-run clinic include a Cardio sleeve, otoscope, and spirometer.

Conclusion

The medical climate created during the COVID-19 pandemic provided unique insight into organizational and workflow-related complications of telehealth modalities.¹⁷ The Comprehensive Medical Care Outreach Team at UCF, serving the communities of Apopka, Florida, was one of many to encounter such issues. This descriptive report serves as a means of describing and preventing such problems in future online adaptations of student-run clinics. During the transition, documentation within electronic records became a time-constrained process, resulting in a decline in the accuracy of recorded vital signs. Bluetooth devices were incorporated to document vitals into electronic records, minimizing this risk automatically. Communication also became a challenge, for which a floor manager was appointed to facilitate collaboration. Access to reliable technology and internet service was essential for efficiency, and future clinics can benefit from on-site technical support. To reduce the risk of record loss from unstable Wi-Fi, student-run clinics can adopt computer-based methods of documentation that do not require internet

access, ensuring all documentation is backed up before being incorporated within the EHR. Such lessons can be used to enhance efficiency and EHR accuracy within student-run clinics. As previously discussed, maximizing organization and time management, and minimizing complications can provide more time spent giving care during patient visits. Ultimately, such measures can lead to better quality care and more positive outcomes in telehealth clinics.

Disclosures

The authors have no conflicts of interest to disclose.

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